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PTO/SB/21 (6-98) 1751

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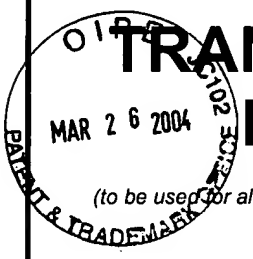

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/812,605
Filing Date	March 20, 2001
First Named Inventor	Richard E. Pearl
Group Art Unit	1751
Examiner Name	Gregory E. Webb
Total Number of Pages in This Submission: 44	Attorney Docket Number: 27200/04005

ENCLOSURES *(check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☑ Amendment / Response (prev. submitted)
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Assignment Papers *(for an Application)*
- ☐ Formal Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition Routing Slip (PTO/SB/69) and Accompanying Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
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- ☐ Request for Refund
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- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group *(Appeal Notice, Brief, Reply Brief)*
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Additional Enclosure(s) *(please identify below)*

- Letter enc. prev. filed Amendments
- Return receipt postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Or Individual name	Calfee, Halter & Griswold, LLP
Signature	**Customer No. 24024**
Date	March 24, 2004

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Typed or printed name	Debra L. Hale		
Signature		Date	March 24, 2004

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Debra L. Hale

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Divisional Application of: Richard E. Pearl

Serial No.: 09/812,605 — Art Unit: 1751

Filed: March 20, 2001 — Examiner: Gregory E. Webb

For: **IMPROVED LATEX PAINT REMOVER** — Attorney Docket No. 27200/04005

Customer No. 24024

Divisional of SN 09/603,059
Filed June 26, 2000

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER

Dear Sir:

In response to a request made by the Examiner by telephone on or about February 27, 2004, Applicant provides herewith a copy of the response filed on October 3, 2003, including a copy of the accompanying return receipt postcard.

Upon checking, we have learned that we have not received the return receipt postcard stamped by the PTO.

Also enclosed is a copy of a Supplemental Amendment filed on October 7, 2003.

Respectfully submitted,

John E. Miller, Reg. No. 26,206
(216)622-8679

{DXH4733.DOC;1}

CALFEE, HALTER & GRISWOLD LLP
1400 McDonald Investment Center
800 Superior Avenue
Cleveland, OH 44114-2688

usbank.
Cleveland, Ohio
56-258/412

DATE 10-03-03

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TO THE ORDER OF: COMMISSIONER FOR PATENTS

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In re Divisional Application of Richard E. Pearl
Serial No.: 09/812,605; filed March 20, 2001
For: **LATEX PAINT REMOVER**
Our Ref: 27200/04005

Please acknowledge receipt of:
- Transmittal (1 pg.); Fee Transmittal (1 pg.);
- Request for Extension of Time (1 pg.);
- Amendment (10 pgs.) w/ attachment (12 pgs.)
- Check in the amount of $1,306.00
- Return receipt postcard

JEM/dlh

{DXH4286.DOC;1}

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Debra L. Hale

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Divisional Application of: Richard E. Pearl	)	
Serial No.: 09/812,605	)	Art Unit: 1751
Filed: March 20, 2001	)	Examiner: Gregory Webb
For: **IMPROVED LATEX PAINT REMOVER**	)	Attorney Docket No. 27200/04005
	)	Customer No. 24024

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Dear Sir:

In response to the Office Action of April 8, 2003, please amend the above-identified application as follows:

Amendments to the claims begin on page 2 of this paper.

Remarks begin on page 7.

CERTIFICATE OF FACSIMILE

I hereby certify that this document is being transmitted via Facsimile No. (703) 872-9310 to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 7th day of October, 2003.

Debra L. Hale

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Divisional Application of: Richard E. Pearl

Serial No.: 09/812,605

Filed: March 20, 2001

For: **IMPROVED LATEX PAINT REMOVER**

Division of SN 09/603,059
Filed June 26, 2000

Art Unit: 1751

Examiner: Gregory E. Webb

Attorney Docket No. 27200/04005

Customer No. 24024

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENT TO AMENDMENT

Dear Sir:

Supplemental to the Amendment filed on October 3, 2003, applicant provides for the Examiner's convenience updated MSDS's for n-methylpyrrolidone and γ-butyrolactone. As can be seen from these documents, both of these solvents are recognized as being eye irritants.

Respectfully submitted,

John E. Miller, Reg. No. 26,206
(216)622-8679

{DXH4304.DOC;1}

Amendments to the Claims

A complete set of the claims now in the case is set forth below. These claims replace all prior versions of the claims.

1. (Currently Amended) A process for removing an organic contaminant from a surface comprising contacting the contaminant with a cleaning composition [comprising] which is essentially free of alkali metal hydroxides, which is not classified as an eye irritant under 16 CFR 1500.42 and which consists essentially of at least 50 wt.% of at least one cleaning member selected from the group consisting of

(a) organic esters having 6 to 10 carbon atoms other than isobutyl isobutyrate,

(b) mixtures containing at least three esters selected from hexyl, heptyl, octyl, nonyl, and decyl acetates,

(c) propylene carbonate, and

(d) naturally-occurring esters having flash points of greater than 60°F and boiling points greater than 120° F,

[wherein the cleaning composition is essentially free of alkali metal hydroxides] and thereafter causing the contaminant to be removed from the surface by at least one of

(i) the flow of the cleaning composition itself,

(ii) the evaporation of the cleaning composition itself,

(iii) wiping the surface, and

(iv) washing the surface with a composition consisting of a liquid.

2. (Previously Amended) The process of claim 1, wherein a contaminant selected from the group consisting of dried latex paint, uncured organic solvent based paint, adhesives, ink, chewing gum, tars, greases, glues, animal fats, vegetable oils, tree sap and other lipophilic soil is removed by contact with the cleaning composition.

3. (Previously Amended) The process of claim 2, wherein the contaminant is dried latex paint.

4. (Amended) The process of claim 2, wherein the cleaning composition comprises at least [10] 80 wt.% cleaning member.

5. (Previously Amended) The process of claim 4, wherein the composition contains at least 10 wt.% of a liquid carrier other than the cleaning member.

6. (Previously Amended) The process of claim 5, wherein the cleaning member is dissolved in an organic solvent exhibiting a Primary Irritation Score of 5.00 or less under 16 CFR 1500.3(c)(4).

7. (Previously Amended) The process of claim 6, wherein the liquid carrier has an MIR of 2.0 or less.

8. (Previously Amended) The process of claim 6, wherein the composition has a flash point of at least about 100°F.

9. (Previously Amended) The process of claim 8, wherein the composition exhibits a Primary Irritation Score of 5.00 or less under 16 CFR 1500.3(c)(4).

10. (Previously Amended) The process of claim 5, wherein the composition has an MIR of 2.0 or less.

11. (Previously Amended) The process of claim 10, wherein the composition is substantially free of aromatic compounds and alkali metal hydroxides.

12. (Previously Amended) The process of claim 1, wherein the composition contains water.

13-20. (Previously Cancelled)

21. (Amended) The process of claim [1] 2, wherein the cleaning member is an organic ester having 6 to 10 carbon atoms other than isobutyl isobutyrate.

22. (Previously Added) The process of claim 1, wherein a contaminant selected from the group consisting of dried latex paint, uncured organic solvent based paint, adhesives, ink, chewing gum, tars, greases, glues, animal fats, vegetable oils, tree sap and other lipophilic soil is removed by contact with a cleaning composition containing at least 10 wt.% of a cleaning member selected from organic esters having 6 to 10 carbon atoms other than isobutyl isobutyrate, the cleaning composition

- having a flash point of at least about 100°F,
- exhibiting a Primary Irritation Score of 5.00 or less under 16 CFR 1500.3(c)(4), and
- having an MIR of 2.0 or less.

23. (Previously Added) The process of claim 22, wherein the cleaning composition contains at least 50 wt.% of the organic ester.

24. (Previously Added) The process of claim 23, wherein the cleaning composition contains at least 80 wt.% of the organic ester.

25. (Previously Added) The process of claim 24, wherein the cleaning composition contains at least 90 wt.% of the organic ester.

26. (New) The process of claim 1, wherein the contaminant is removed from the surface by washing the surface with soapy water or an organic solvent.

27. (New) The process of claim 1, wherein the cleaning composition consists of at least 80 wt.% of the cleaning member and at least one additional ingredient selected from the group consisting of colorants, antioxidants, fragrances emollients, thickeners, defoamers, surfactants and liquid carriers.

28. (New) The process of claim 27, wherein the cleaning composition

- has a flash point of at least about 100°F,
- exhibits a Primary Irritation Score of 5.00 or less under 16 CFR 1500.3(c)(4), and
- has an MIR of 2.0 or less.

29. (New) A process for removing an organic contaminant from a surface, the organic contaminant comprising dried latex paint, uncured organic solvent based paint, adhesives, ink, chewing gum, tars, greases, glues, animal fats, vegetable oils, tree sap or other lipophilic soil, the process comprising contacting the contaminant with a cleaning composition which is essentially free of alkali metal hydroxides, has a flash point of at least about 100°F, which exhibits a Primary Irritation Score of 5.00 or less under 16 CFR 1500.3(c)(4), which has an MIR of 2.0 or less and which is not classified as an eye irritant under 16 CFR 1500.42, the composition consisting essentially of at least 80 wt.% of at least one cleaning member selected from the group consisting of

(a) organic esters having 6 to 10 carbon atoms other than isobutyl isobutyrate,

(b) mixtures containing at least three esters selected from hexyl, heptyl, octyl, nonyl, and decyl acetates,

(c) propylene carbonate, and

(d) naturally-occurring esters having flash points of greater than 60°F and boiling points greater than 120° F,

and thereafter causing the contaminant to be removed from the surface by at least one of

(i) the flow of the cleaning composition itself,

(ii) the evaporation of the cleaning composition itself,

(iii) wiping the surface, and

(iv) washing the surface with a composition consisting of a liquid.

30. (New) The process of claim 29, wherein the contaminant is dried latex paint.

31. (New) The process of claim 29, wherein the cleaning composition optionally contains a liquid carrier, the liquid carrier having an MIR of 2.0 or less.

32. (New) The process of claim 31, wherein the liquid carrier

- is non-toxic according to 16 CFR 1500.3(c)(2)(i),
- exhibits a Primary Irritation Score of 5.00 or less under, and
- is not an eye irritant under 16 CFR 1500.42.

33. (New) A process for removing dried latex paint from a surface, the process comprising contacting the dried latex paint with a cleaning composition which is essentially free of alkali metal hydroxides, has a flash point of at least about 100°F, which exhibits a Primary Irritation Score of 5.00 or less under 16 CFR 1500.3(c)(4), which has an MIR of 2.0 or less and which is not classified as an eye irritant under 16 CFR 1500.42, the composition consisting essentially of at least 50 wt.% of at least one cleaning member selected from the group consisting of organic esters having 7 to 9 carbon atoms other than isobutyl isobutyrate, and thereafter causing the contaminant to be removed from the surface by at least one of

(i) the flow of the cleaning composition itself,

(ii) the evaporation of the cleaning composition itself,

(iii) wiping the surface, and

(iv) washing the surface with a composition consisting of a liquid.

34. (New) The process of claim 33, wherein the organic ester has 7 carbon atoms.

35. (New) The process of claim 33, wherein the organic ester has 8 carbon atoms.

36. (New) The process of claim 33, wherein the organic ester has 9 carbon atoms.

37. (New) The process of claim 33, wherein the composition consists essentially of at least 80 wt.% of the cleaning member.

38. (New) The process of claim 37, wherein the organic ester has 7 carbon atoms.

39. (New) The process of claim 37, wherein the organic ester has 8 carbon atoms.

40. (New) The process of claim 37, wherein the organic ester has 9 carbon atoms.

41. (New) The process of claim 37, wherein the ester is a heptanoate.

42. (New) The process of claim 37, wherein the ester is a propionate.

43. (New) A process for removing dried latex paint from a surface, the process comprising contacting the dried latex paint with a cleaning composition which is essentially free of alkali metal hydroxides, has a flash point of at least about 100°F, which exhibits a Primary Irritation Score of 5.00 or less under 16 CFR 1500.3(c)(4), which has an MIR of 2.0 or less and which is not classified as an eye irritant under 16 CFR 1500.42, the composition consisting essentially of at least 50 wt.% of at least one cleaning member selected from the group consisting of organic esters having 7 to 9 carbon atoms other than isobutyl isobutyrate.

CERTIFICATE OF MAILING

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Debra L. Hale

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Divisional Application of: Richard E. Pearl	)	
Serial No.: 09/812,605	)	Art Unit: 1751
Filed: March 20, 2001	)	Examiner: Gregory Webb
For: **IMPROVED LATEX PAINT REMOVER**	)	Attorney Docket No. 27200/04005
	)	Customer No. 24024

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR EXTENSION OF TIME

Dear Sir:

Pursuant to 37 C.F.R. §1.136(a), applicants hereby petition for a three-month extension of the statutory period for response to the Office Action dated April 8, 2003. Enclosed is a check including $950.00 to cover the large entity three-month extension of time to respond.

If any additional fees are due with this request, please charge our Deposit Account No. 03-0172.

Respectfully submitted,

John E. Miller, Reg. No. 26,206
(216) 622-8679

Please type a plus sign (+) inside this → [+]

PTO/SB/21 (6-98)
Approved for u. ough 09/30/2000. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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TRANSMITTAL FORM

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Total Number of Pages in This Submission	25

Application Number	09/812,605
Filing Date	March 20, 2001
First Named Inventor	Richard E. Pearl
Group Art Unit	1751
Examiner Name	Gregory E. Webb
Attorney Docket Number	27200/04005

ENCLOSURES ***(check all that apply)***

- ☑ Fee Transmittal Form
  - ☑ Fee Attached
- ☑ Amendment / Response
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☑ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
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  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Assignment Papers *(for an Application)*
- ☐ Formal Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition Routing Slip (PTO/SB/69) and Accompanying Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Small Entity Statement
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- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group *(Appeal Notice, Brief, Reply Brief)*
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Additional Enclosure(s) *(please identify below)*

- Check for $1,306.00
- Return receipt postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Or Individual name	Calfee, Halter & Griswold, LLP
Signature	**Customer No. 24024**
Date	October 3, 2003

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Typed or printed name	Debra L. Hale		
Signature		Date	October 3, 2003

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FEE TRANSMITTAL for FY 2003

Patent fees are subject to annual revision

TOTAL AMOUNT OF PAYMENT ($) 1,306.00

Complete if Known	
Application Number	09/812,605
Filing Date	March 20, 2001
First Named Inventor	Richard E. Pearl
Examiner Name	Gregory E. Webb
Group Art Unit	1751
Attorney Docket No.	27200/04005

METHOD OF PAYMENT

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number: 03-0172

Deposit Account Name: Calfee, Halter & Griswold LLP

☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

☐ Applicant claims small entity status See 37 CFR 1.27

2. ☒ **Payment Enclosed:**
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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	710	201	355	Utility filing fee	
106	320	206	160	Design filing fee	
107	490	207	245	Plant filing fee	
108	710	208	355	Reissue filing fee	
114	150	214	75	Provisional filing fee	

SUBTOTAL (1) $

2. EXTRA CLAIM FEES

	Extra Claims		Fee from below		Fee Paid
Total Claims 35	-20** 15	x	18	=	270
Independent Claims 4	-3** 1	x	86	=	86
Multiple Dependent				=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	86	202	43	Independent claims in excess of 3
104	270	204	135	Multiple dependent claim, if not paid
109	80	209	40	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) $356

** or number previously paid, if greater; For Reissue, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for *ex parte* reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	390	216	195	Extension for reply within second month	
117	950	217	475	Extension for reply within third month	950
118	1,390	218	695	Extension for reply within fourth month	
128	1,890	228	945	Extension for reply within fifth month	
119	310	219	155	Notice of Appeal	
120	310	220	155	Filing a brief in support of an appeal	
121	270	221	135	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,240	241	620	Petition to revive - unintentional	
142	1,240	242	620	Utility issue fee (or reissue)	
143	440	243	220	Design issue fee	
144	600	244	300	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	130	123	130	Petitions related to provisional applications	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))	
179	710	279	355	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	
Other fee (specify)					

* Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 950

SUBMITTED BY				Complete (*if applicable*)	
Name (Print/Type)	John E. Miller	*Registration No. (Attorney/Agent)*	26,206	*Telephone*	(216) 622-8679
Signature				*Date*	October 3, 2003

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Customer No. 24024

REMARKS

The foregoing amendments are made to more thoroughly define the subject matter Applicant regards as his invention. Support for the limitations added to claim 1 regarding the fact that the cleaning composition is not an eye irritant and the subsequent removal of the contaminant can be found in the specification at page 8, lines 8 and 15-19. Support for the limitations in new claims 33-43 regarding the particular esters recited in these claims can be found in the specification at page 4, lines 1-2.

Applicant respectfully traverses the various prior art rejections insofar as they apply to the claims as amended. An important feature of the present invention is that the cleaning compositions used in the inventive process are strong enough to remove most contaminants commonly found in the home environment, including dried latex paint as well as uncured organic solvent based paints, while at the same time being substantially benign (or at least not particularly detrimental) from an environmental and health standpoint. Although the cited references show many organic chemicals being used in many different industrial processes, they do not show or suggest processes in which common **household organic contaminants** are easily removed with essentially benign organic solvents.

Thus, the Roelofs patent does indeed show removing paint from paint fluid delivery system using cleaning compositions which may include a wide variety of different organic solvents, including some of the organic solvents used in the cleaning compositions of the present invention. However, an essential feature of the Roelof's cleaning compositions is that they also contain abrasive particles. Col. 3, line 15 and col. 5, line 12. Therefore, this patent does not disclose or suggest a process in which a cleaning composition which is **not classified as an eye irritant** under 16 CFR 1500.42 and which **consists essentially of** the indicated cleaning members, as now recited in claim 1, is used to remove an organic contaminant from a surface.[1]

As stated by the Federal Circuit in AK Steel Corporation v. Sollac et al., (No. 03-1074,-1075,-1085,-1086)(Fed. Cir. 9/23/03) (citing PPG Indus. v. Guardian Indus. Corp., 156 F.3d 1351, 1354 (Fed. Cir. 1998) and In re Janakirama-Rao, 317 F.2d 951, 954 (CCPA 1963)) "consisting essentially of" in a patent claim permits inclusion of components not listed in the

[1] Applicant has not specifically tested the Roelofs compositions according to the eye irritant test of 16 CFR 1500.42, but presumes they would not pass this test because of they contain significant amounts of abrasive particles.

claim, provided that they do not "materially affect the basic and novel properties of the invention."

In this case, Roelof's abrasive particles would clearly cause eye irritation and hence would exert a material adverse effect on the cleaning compositions of the present invention. Thus, these ingredients are excluded from the scope of Applicant's claims. That being the case, the Roelofs Patent does not disclose or suggest the subject matter of these claims, since cleaning with abrasive particles is a critical feature of the Roelofs technology.

In this connection, Applicant notes that the "organic solvents, surfactants, acids, and alkali materials that are suitable for the [patented] abrasive cleaner compositions" can also be used to pretreat the fluid handling systems being cleaned in the Roelofs patent. *See*, col. 7, lines 36-38. However, such pretreating must be followed by treatment with the patented cleaning compositions, which necessarily contain abrasive particles, as indicated above. Accordingly, this patent does not disclose or suggest a cleaning process in which the contaminant is removed by

(i) the flow of the cleaning composition itself,

(ii) the evaporation of the cleaning composition itself,

(iii) wiping the surface, and/or

(iv) washing the surface with a composition **consisting of** a liquid,

as also expressly recited in claim 1. Mannesmann Demag Corp v. Engineered Metal Products Co., 793 F.2d 1279, 230 U.S.P.Q. 45 (Fed. Cir. 1986). ("Consisting of" is a special term in patent law meaning that the claim is "closed to the inclusion of materials other than those recited except for impurities ordinarily associated therewith.")

The newly cited Volk patent teaches that a composition containing an organic ester (specifically, a C_1-C_4 dialkyl ester of a C_4-C_6 aliphatic dibasic acid) and at least 40 wt.% N-methyl-2-pyrrolidone or analog can be used to remove paint. Similarly, the Gaul patent teaches that a composition containing an organic ester (specifically, dimethyl and diethyl esters of adipic, glutaric and succinic acids) and at least 10 wt.% of γ-butyrolactone can be used to remove paint. However, as can be seen from the attached MSDS's, both of these additional compounds, i.e., both N-methyl-2-pyrrolidone and γ-butyrolactone, are eye irritants. Moreover, N-methyl-2-pyrrolidone has an MIR of 2.79, as can be seen from the attached table of MIR values. Therefore, these patents also fail to disclose or suggest the inventive process in which an organic

component is removed from a surface using a cleaning composition which is **not classified as an eye irritant** under 16 CFR 1500.42 and which **consists essentially of** the indicated cleaning members, as now recited in claim 1.[2]

The additionally cited Wilkins patent also fails to disclose or suggest the present invention. Although this patent does show that various types of paints including polyurethanes and epoxies can be removed with cleaning compositions containing organic esters, a critical feature of the Wilkins cleaning compositions is that they contain a significant amount of a peroxide. If they do not, they fail for their intended purpose. *See*, Example E of the Wilkins patent which shows no removal when peroxide is absent. Accordingly, this patent also fails to disclose or suggest removing a common household organic component from a surface using a cleaning composition which is **not classified as an eye irritant** under 16 CFR 1500.42 and which **consists essentially of** the indicated cleaning members, as now recited in claim 1.[3]

In this connection, it is important to note that the inventive process is directed primarily to removing dried latex paint and other common household organic contaminants (including **uncured** organic solvent based paints), as described at the bottom of page 2 of the specification and expressly recited in claims 2 and 27. It is not directed to removing more tenacious organic coatings such as those commonly found in many industrial applications and described in most of the references cited against the claims. For example, it is not directed to removing the polyurethane and epoxy/polyimide coatings of Example 2E of the Wilkins patent. Thus, Example 2E of the Wilkins patent does not anticipate or suggest the inventive process as now claimed, since no removal occurred of an organic coating which is more tenacious than the organic contaminants being claimed.

Finally, Applicant again respectfully traverses the anticipation rejection based on the Yezrielev patent, insofar as it applies to the claims as amended. The gist of the disclosure at col. 6, lines 5-7 is that the fluid and fluid blends of this patent can be used to wholly or partially replace previously-used liquids **in every process known to man**. Moreover, the Yezrielev patent is clear that "[f]luid applications are broad, varied, and complex, and each application has its own set of characteristics and requirements." *See*, col. 1, lines 22-25.

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[2] The N-methyl-2-pyrrolidone and γ-butyrolactone of Volk and Gaul have also not been specifically tested by Applicant according to 16 CFR 1500.42.

[3] Wilkins's cleaning compositions have also not been specifically tested by Applicant according to 16 CFR 1500.42.

Thus, to achieve the present invention from the disclosure of this patent, one of ordinary skill in the art[4] would not only have to select the particular cleaning ingredients recited in Applicant's claims from the rather long list of possibilites set forth in col. 13, lines 5 to 36 but also choose the particular application recited in Applicant's claims (i.e., removing an organic contaminant from a surface) from the almost infinite number of possibilities also set out in the specification of this patent. Moreover, this would have to be done without any suggestion from this patent regarding which particular organic solvents should be used for cleaning processes in general and for cleaning organic contaminants such as dried latex paints in particular.

As indicated in the previous Amendment, the Federal Circuit has made clear that:

> ". . . rejections under 35 USC 102 are proper only when the claimed subject matter *is* identically disclosed or described in "the prior art." Thus, for the instant rejection under 35 USC 102. . .to have been proper, the Flynn reference must clearly and unequivocally disclose the claimed compound or direct those skilled in the art to the compound without *any* need for picking, choosing and combining various disclosures not directly related to each other by the teachings of the cited reference." (emphasis added) In re Arkley et al., 455 F.2d 586, 172 USPQ 524 (CCPA 1972)

Here, the total possible combinations of organic solvents on the one hand and processes for using such solvents on the other hand are almost endless. Moreover, there is simply no disclosure fairly associating particular solvents described in this patent with particular processes described in this patent, at least insofar as Applicant's claims are concerned. Therefore, this patent simply fails **identically describe** the subject matter recited in the claims now in the case in the sense of the Arkley case.

If any additional fees are due with this Amendment, please charge our Deposit Account No. 03-0172.

Respectfully submitted,

John E. Miller, Reg. No. 26,206
(216)622-8679

[4] Which particular art this might be is completely unknown, since just about every field of technology known to man which uses a liquid in any way for any purpose appears to be covered by this disclosure.

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DIRECT DIAL PHONE NUMBER: 216-622-8679

CLIENT NO.: 27200/04005

CLIENT NAME: Magic American

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Title: IMPROVED LATEX PAINT REMOVER

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CONFIRMATION
PHONE NUMBER:

FROM: John E. Miller, Esq.
DIRECT DIAL PHONE NUMBER: 216-622-8679

CLIENT NO.: 27200/04005

CLIENT NAME: Magic American

NUMBER OF PAGES (Including this page): 14

MESSAGE: **U.S. Patent and Trademark Office Filing**

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Title: IMPROVED LATEX PAINT REMOVER

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CALFEE, HALTER & GRISWOLD LLP

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Columbus Fax Number • 614/621-0010

SIGMA-ALDRICH

Material Safety Data Sheet

Date Printed: 10/06/2003
Date Updated: 09/06/2002
Version 1.60

Section 1 - Product and Company Information

Product Name	1-METHYL-2-PYRROLIDINONE, 99+%, HPLC GRADE		
Product Number	270458		
Brand	Aldrich Chemical		
Company	Sigma-Aldrich		
Street Address	3050 Spruce Street		
City, State, Zip, Country	SAINT LOUIS, MO 63103 US		
Technical Phone:	314 771 5765	**Emergency Phone:**	414 273 3850 Ext. 5998
Fax:	800 325 5052		

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
1-METHYL-2-PYRROLIDINONE	872-50-4	Yes

Formula C5H9NO
Synonyms N-Methylpyrrolidinone, N-Methyl-2-pyrrolidinone, 1-Methyl-2-pyrrolidinone, 1-Methyl-5-pyrrolidinone, N-Methylpyrrolidone, N-Methyl-alpha-pyrrolidone, N-Methyl-2-pyrrolidone, 1-Methyl-2-pyrrolidone, M-Pyrol, NMP

Section 3 - Hazards Identification

Emergency Overview
Irritant.
Irritating to eyes and skin.
Combustible. Target organ(s): Bone marrow. Spleen. Calif. Prop. 65 reproductive hazard.

HMIS Rating
Health: 2* Flammability: 2 Reactivity: 1

NFPA Rating
Health: 2 Flammability: 2 Reactivity: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Dermal Exposure
In case of contact, immediately wash skin with soap and copious amounts of water.

Eye Exposure
In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

Section 5 - Fire Fighting Measures

Flammable Hazards: Yes

Flash Point: 187 °F 86 °C

Explosion Limits: **Lower:** 1.3 % **Upper:** 9.5 %

Autoignition Temp: 270 °C **Flammability:** Yes

Extinguishing Media
Suitable
Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting
Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s)
Emits toxic fumes under fire conditions. Combustible liquid.

Section 6 - Accidental Release Measures

Procedure(s) of Personal Precaution(s)
Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up
Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling
User Exposure
Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage
Suitable
Keep tightly closed. Keep away from heat and open flame. Store in a cool dry place.

Special Requirements
Moisture sensitive Store under inert gas.

Section 8 - Exposure Controls / PPE

Engineering Controls
Mechanical exhaust required. Safety shower and eye bath.

Personal Protective Equipment
Respiratory
Government approved respirator.
Hand
Compatible chemical-resistant gloves.
Eye
Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance

Physical State	Color
Liquid	Colorless

Molecular Weight: 99.13 AMU

Property	Value	At Temperature or Pressure	
pH	7.7 - 8		
BP/BP Range	78 - 79 °C	12 mmHg	
MP/MP Range	-24 °C		
Freezing Point	-23.6 °C		
Vapor Pressure	0.29 mmHg	20 °C	
Vapor Density	3.4 g/l		
Saturated Vapor Conc.	N/A		
SG/Density	1.032 g/cm3		
Bulk Density	N/A		
Odor Threshold	N/A		
Volatile%	N/A		
VOC Content	N/A		
Water Content	< 0.01 %		
Solvent Content	N/A		
Evaporation Rate	N/A		
Viscosity	0.002 Pas	20 °C	
Surface Tension	40.7 mN/m		
Partition Coefficient	Log Kow: -0.46		
Decomposition Temp.	N/A		
Flash Point °F	187 °F		Method: closed cup
Flash Point °C	86 °C		Method: closed cup
Explosion Limits	Lower: 1.3 % Upper: 9.5 %		
Flammability	N/A		
Autoignition Temp	270 °C		
Refractive Index	1.47		

Solubility
Other Solvents: MISCIBLE IN WATER, LOWER, ALCOHOLS AND KETONE, ETHYL ACETATE, CHLROFORM, BENZENE.

N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable
Stable.
Conditions to Avoid
Protect from moisture.
Materials to Avoid
Strong acids, Strong oxidizing agents.

Hazardous Decomposition Products
Hazardous Decomposition Products
Carbon monoxide, Carbon dioxide.

Hazardous Polymerization

Hazardous Polymerization

Will not occur.

Section 11 - Toxicological Information

Route of Exposure

Skin Contact

Causes skin irritation.

Skin Absorption

May be harmful if absorbed through the skin.

Eye Contact

Causes eye irritation.

Inhalation

May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion

May be harmful if swallowed.

Target Organ(s) or System(s)

Bone marrow. Thymus. Spleen. Lymphatic system.

Signs and Symptoms of Exposure

Prolonged exposure can cause: Stomach pains, vomiting, diarrhea. Rats exposed to 1-methyl-2-pyrrolidinone at a concentration of 1 mg/L as an aerosol for 10 days showed depletion of hematopoietic cells in the bone marrow and atrophy of the lymphoid tissues of the thymus, spleen, and lymph nodes.

RTECS Number: UY5780000

Toxicity Data

Oral - Rat: 3,914 mg/kg (LD50)

Intraperitoneal - Rat: 2472 MG/KG (LD50)

Subcutaneous - Rat: >2 GM/KG (LD50)

Intravenous - Rat: 80500 UG/KG (LD50)

Oral - Mouse: 5,130 mg/kg (LD50)

Intraperitoneal - Mouse: 3050 MG/KG (LD50)

Intravenous - Mouse: 54500 UG/KG (LD50)

Intravenous - Dog: 63300 UG/KG (LD50)

Skin - Rabbit: 8,000 mg/kg (LD50)

Irritation Data

Eyes - Rabbit: 100 mg
Remarks: Moderate irritation effect

Chronic Exposure Carcinogen

Mouse - Oral: 784 GM/KG 78W C
Result: Tumorigenic:Carcinogenic by RTECS criteria. Liver:Tumors.

Chronic Exposure - Teratogen

Species	*Dose*	*Route of Application*	*Exposure Time*
Rat	9700 MG/KG	Oral	(6-15D PREG)

Result:Effects on Embryo or Fetus: Fetal death.
Specific Developmental Abnormalities: Other developmental abnormalities.

Rat	116 PPM/6H	Inhalation	(MULTIGENERATION S)

Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Chronic Exposure - Reproductive Hazard

Species	*Dose*	*Route of Application*	*Exposure Time*
Rat	150 PPM/6H	Inhalation	(7-20D PREG)
	Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Delayed effects.		
Rat	7500 MG/KG	Skin	(6-15D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
Rat	7500 MG/KG	Skin	(6-15D PREG)
	Result: Maternal Effects: Other effects. Specific Developmental Abnormalities: Musculoskeletal system.		
Rat	166 MG/KG	Intraperitoneal	(9D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Musculoskeletal system.		
Mouse	12825 MG/KG	Oral	(11-15D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Craniofacial (including nose and tongue).		
Mouse	7825 MG/KG	Intraperitoneal	(11-15D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Craniofacial (including nose and tongue).		

Section 12 - Ecological Information

Acute Ecotoxicity Tests

Test Type	
EC50 Daphnia	
Species	
Daphnia magna	
Time:	**Value:**
24.0 h	> 1,000 mg/l
Test Type	
IC50 Algae	
Time:	**Value:**
72.0 h	> 500 mg/l
Test Type	
LC50 Bacteria	
	Value:
	> 9,000 mg/l
Test Type	
LC50 Fish	
Time:	**Value:**
96.0 h	4,000 mg/l

Elimination

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material.
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Combustible liquid, n.o.s.
UN#: 1993
Class: COMBUSTIBLE LIQUID
Packing Group: Packing Group III
Hazard Label: None.

PIH: Not PIH

IATA
Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU Directives Classification
Symbol of Danger: Xi
Indication of Danger
Irritant.
Risk Statements **R:** 36/38
Irritating to eyes and skin.
Safety Statements **S:** 41
In case of fire and/or explosion do not breathe fumes.

US Classification and Label Text
Indication of Danger
Irritant.
Risk Statements
Irritating to eyes and skin.
Safety Statements
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing. In case of fire and/or explosion do not breathe fumes.
US Statements
Combustible. Target organ(s): Bone marrow. Spleen. Calif. Prop. 65 reproductive hazard.

United States Regulatory Information
SARA Listed: Yes
Deminimis: 1 %
Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

United States - State Regulatory Information
California Prop - 65
This product is or contains chemical(s) known to the state of California to cause developmental toxicity.

Canada Regulatory Information
WHMIS Classification
This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Section 16 - Other Information

Disclaimer
For R&D use only. Not for drug, household or other uses.

Warranty
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

SIGMA-ALDRICH

Material Safety Data Sheet

Date Printed: 10/06/2003
Date Updated: 04/16/2003
Version 1.40

Section 1 - Product and Company Information

Product Name	γ-Butyrolactone, 99+%		
Product Number	B103608		
Brand	Aldrich Chemical		
Company	Sigma-Aldrich		
Street Address	3050 Spruce Street		
City, State, Zip, Country	SAINT LOUIS, MO 63103 US		
Technical Phone:	314 771 5765	**Emergency Phone:**	414 273 3850 Ext. 5996
Fax:	800 325 5052		

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
GAMMA-BUTYROLACTONE	96-48-0	No

Formula C4H6O2

Synonyms gamma-6480, Agrisynth BLO, gamma-BL, 4-Butanolide, 1,2-Butanolide, 1,4-Butanolide, Butyric acid, 4-hydroxy-, gamma-lactone, Butyric acid lactone, Butyrolactone, gamma-Butyrolactone, 4-Butyrolactone, Butyrylactone, Butyryl lactone, C-1070, 4-Deoxytetronic acid, Dihydro-2(3H)-furanone, 4-Hydroxybutanoic acid lactone, 4-Hydroxybutanoic acid, gamma-lactone, gamma-Hydroxybutyric acid cyclic ester, 4-Hydroxybutyric acid lactone, 4-Hydroxybutyric acid, gamma-lactone, gamma-Hydroxybutyric acid lactone, gamma-Hydroxybutyrolactone, NCI-C55878, 2-Oxolanone, Tetrahydro-2-furanone

Section 3 - Hazards Identification

Emergency Overview
Harmful.
Harmful if swallowed. Irritating to eyes.
Target organ(s): Central nervous system.

HMIS Rating
Health: 2* Flammability: 1 Reactivity: 1

NFPA Rating
Health: 2 Flammability: 1 Reactivity: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure
If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

Dermal Exposure
In case of contact, immediately wash skin with soap and copious amounts of water.

Eye Exposure
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Explosion Hazards
Vapor/air mixtures are explosive at high temperatures.

Flash Point:	208.4 °F	98 °C
Explosion Limits:	**Lower:** 1.4 %	**Upper:** 18 %
Autoignition Temp:	455 °C	

Extinguishing Media
Suitable
Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting
Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s)
Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill
Evacuate area.

Procedure(s) of Personal Precaution(s)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up
Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling
User Exposure
Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage
Suitable
Keep tightly closed.

Special Requirements
Hygroscopic.

Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment
Respiratory
Government approved respirator.
Hand
Compatible chemical-resistant gloves.
Eye
Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance

Physical State	Color
Clear liquid	Colorless

Molecular Weight: 86.09 AMU

Property	Value	At Temperature or Pressure	
pH	N/A		
BP/BP Range	204 - 205 °C	760 mmHg	
MP/MP Range	-45 °C		
Freezing Point	N/A		
Vapor Pressure	1.5 mmHg	20 °C	
Vapor Density	3 g/l		
Saturated Vapor Conc.	N/A		
SG/Density	1.129 g/cm3		
Bulk Density	N/A		
Odor Threshold	N/A		
Volatile%	N/A		
VOC Content	N/A		
Water Content	N/A		
Solvent Content	N/A		
Evaporation Rate	N/A		
Viscosity	N/A		
Partition Coefficient	Log Kow: -0.57		
Decomposition Temp.	N/A		
Flash Point °F	208.4 °F		Method: closed cup
Flash Point °C	98 °C		Method: closed cup
Explosion Limits	Lower: 1.4 %		
	Upper: 16 %		
Flammability	N/A		
Autoignition Temp	455 °C		
Refractive Index	1.437		

Solubility N/A

N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable
Stable.
Conditions of Instability
Hygroscopic.
Materials to Avoid
Strong acids, Strong bases, Strong oxidizing agents, Strong reducing agents, Zinc, Plastics.

Hazardous Decomposition Products
Hazardous Decomposition Products
Carbon monoxide, Carbon dioxide.

Hazardous Polymerization
Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

Route of Exposure
Skin Contact
May cause skin irritation.
Skin Absorption
May be harmful if absorbed through the skin.
Eye Contact
Causes eye irritation.
Inhalation
May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
Ingestion
Harmful if swallowed.

Target Organ(s) or System(s)
Central nervous system.

Signs and Symptoms of Exposure
Inhalation may have an anesthetic effect on the central nervous system characterized by a loss of sensation. Preliminary excitement is the initial effect followed by relaxation, stupor, or sleep. Exposure can cause: Nausea, dizziness, and headache.

RTECS Number: LU3500000

Toxicity Data

Oral - Rat: 1,540 mg/kg (LD50)
Remarks: Behavioral:Altered sleep time (including change in righting reflex).
Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Respiratory depression.

Inhalation - Rat: > 5,100 mg/m3 (LC50)

Intraperitoneal - Rat: 1 GM/KG (LD50)
Remarks: Behavioral:General anesthetic.
Lungs, Thorax, or Respiration:Other changes.

Oral - Mouse: 1,460 mg/kg (LD50)
Remarks: Behavioral:General anesthetic.
Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Respiratory depression.

Intraperitoneal - Mouse: 1100 MG/KG (LD50)
Remarks: Behavioral:General anesthetic.

Lungs, Thorax, or Respiration:Other changes.

Skin - Guinea pig: > 5,000 mg/kg (LD50)

Irritation Data

Skin - Rabbit: 0.5 ml
Remarks: Severe irritation effect

Chronic Exposure - Carcinogen
Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Mouse - Oral: 191 GM/KG 2Y C
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Endocrine:Adrenal cortex tumors.

Mouse - Skin: 50 GM/KG 42W I
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors. Tumorigenic:Tumors at site or application.

IARC Carcinogen List

Rating
Group 3

NTP Carcinogen List

Rating	Species	Route
Equivocal evidence.	Mouse	Gavage
No evidence.	Rat	Gavage

Chronic Exposure - Teratogen

Species	Dose	Route of Application	Exposure Time
Rat	500 MG/KG	Oral	(6-15D PREG)

Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Chronic Exposure - Mutagen

Species	Dose	Cell Type	Mutation test
Hamster	25 MG/L	kidney	Morphological transformation.
Hamster	2580 MG/L	ovary	Cytogenetic analysis
Hamster	4940 MG/L	ovary	Sister chromatid exchange

Chronic Exposure - Reproductive Hazard

Species	Dose	Route of Application	Exposure Time
Rat	25 GM/KG	Oral	(20D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Section 12 - Ecological Information

Acute Ecotoxicity Tests

Test Type		
LC50 Fish		
Species		
Leuciscus idus		
Time:	**Value:**	
96.0 h	> 220 mg/l	

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU Additional Classification

Symbol of Danger: Xn
Indication of Danger
Harmful.
Risk Statements R: 22 36
Harmful if swallowed. Irritating to eyes.
Safety Statements S: 26 36
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US Classification and Label Text

Indication of Danger
Harmful.
Risk Statements
Harmful if swallowed. Irritating to eyes.
Safety Statements
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.
US Statements
Target organ(s): Central nervous system.

United States Regulatory Information
SARA Listed: No

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification
This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Section 16 - Other Information

Disclaimer
For R&D use only. Not for drug, household or other uses.

Warranty
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

REPORT NUMBER: 971
DS NO: P2466
EFFECTIVE DATE: 10/25/90

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

PAGE: 001
VERSION: 010

M-Pyrol

PRODUCT: N-METHYLPYRROLIDONE.

ORDER NO:
PROD NO :

VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

---------- EMERGENCY ASSISTANCE ----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

---------- FOR PRODUCT AND SALES INFORMATION ----------

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE AT
VW&R CLEVELAND 216-425-4330 TWINSBURG , OH

----------PRODUCT IDENTIFICATION----------

PRODUCT NAME: N-METHYLPYRROLIDONE CAS NO.: 872-50-4

COMMON NAMES/SYNONYMS: M-PYROL N-METHYLPYRROLIDONE; NMP; N-METHYL 2 PYRROLIDONE ELECTRONIC GRADE MSDS #: P2466

FORMULA: C5 H9 N O DATE ISSUED: 10/90

MOLECULAR WEIGHT: 99.1 SUPERCEDES: 04/90

HAZARD RATING (MANUFACTURER)

HEALTH: 2
FIRE: 2
REACTIVITY: 0
SPECIAL: NONE

HAZARD RATING SCALE
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HMIS RATING

HEALTH: 2
FIRE: 2
REACTIVITY: 0

----------HAZARDOUS INGREDIENTS----------

COMPONENT	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD

M-PYROL

REPORT NUMBER: 971
DS NO: P2466
EFFECTIVE DATE: 10/26/90

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

VERSION: 010

PRODUCT: N-METHYLPYRROLIDONE

ORDER NO:
PROD NO :

N-METHYLPYRROLIDONE	>99	NONE	NONE	100 (BASF)	COMBUSTIBLE

PHYSICAL PROPERTIES

BOILING POINT, DEG F: 395

MELTING POINT, DEG F: N/A

SPECIFIC GRAVITY (WATER=1): 1.027

VAPOR PRESSURE, MM HG: <1 pH: 7.7-8.0 (100 G/L WATER)

VAPOR DENSITY (AIR=1): 3.4 WATER SOLUBILITY %: 100

EVAPORATION RATE (BUTYL ACETATE = 1): <1

VOLATILE (BY VOLUME): 100

APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID; SLIGHT AMINE ODOR.

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

NOTES TO PHYSICIAN: NONE

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE

N-PYROL

REPORT NUMBER: 971
MSDS NO: P2466
EFFECTIVE DATE: 10/26/90

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

VERSION: 010

PRODUCT: N-METHYLPYRROLIDONE

CAS# 872-50-4

ORDER NO:
PROD NO :

INHALATION: PROLONGED OR REPEATED EXPOSURE OR BREATHING VERY HIGH CONCENTRATIONS MAY CAUSE HEADACHES, NAUSEA, AND VOMITING.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS WILL IRRITATE AND MAY CAUSE TEMPORARY CORNEAL CLOUDING.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS.

SWALLOWED: INGESTION OF LARGE AMOUNTS MAY CAUSE GASTRIC DISTURBANCES.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN.

----------TOXICITY DATA----------

ORAL: RAT LD50 = 3,600 MG/KG

DERMAL: RABBIT LD50 = 8,000 MG/KG

INHALATION: NO DEATHS AFTER 8 HOURS EXPOSURE TO SATURATED VAPORS.

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: CONTACT WITH THE LIQUID RESULTS IN EYE IRRITATION AND MAY CAUSE TEMPORARY CORNEAL CLOUDING. PROLONGED SKIN CONTACT CAUSES IRRITATION, REDNESS AND DEFATTING. INGESTION OF LARGE AMOUNTS MAY CAUSE GASTRIC DISTURBANCES. IN ANIMAL STUDIES IN RATS AND MICE, NMP WAS EMBRYOTOXIC BY THE ORAL AND INTRAPERITONEAL ROUTES AT VERY HIGH DOSE LEVELS WHICH WERE CLOSE TO THE LD50.

IN A DERMAL EXPOSURE STUDY WITH RATS, NMP WAS ONLY EMBRYOTOXIC AT THE HIGH DOSE LEVEL; THIS EFFECT WAS ATTRIBUTED TO MATERNAL TOXICITY. SEVERAL INHALATION STUDIES IN RATS DID NOT REVEAL ANY INDICATION OF MATERNAL TOXICITY OR EMBRYOTOXICITY. IN A TWO YEAR INHALATION STUDY, NMP DID NOT CAUSE ANY LIFE-SHORTENING OR CARCINOGENIC EFFECTS IN RATS AT 0.04 OR 0.4 MG/LITER (10 AND 100 PPM RESPECTIVELY).

----------ECOLOGICAL INFORMATION SECTION----------

ATIC TOXICITY:

BLUE GILLS (LEPOMIS MACROCHIRUS) LC50 - 832 MG/L

LS-502

MATERIAL SAFETY DATA SHEET

GAMMA BUTYROLACTONE

MSDS No P000677-1-OSHA-AE
MSDS CLASS H
Ver. No 1
Ver. Date NOV 3 93

ARCO Chemical Company
3801 West Chester Pike
Newtown Square
PA 19073 USA

IMPORTANT : Read this MSDS before handling and disposing of this product and pass this information on to the employees, customers, and users of this product. This product is covered by the OSHA Hazard Communication Rule and this document has been prepared in accord with the MSDS requirements of this rule.

1. General

Trade Name	GAMMA BUTYROLACTONE	Telephone Numbers : EMERGENCY 800/424-9300 CHEMTREC; 610/359-8300 ARCO CHEM; CUSTOMER SERVICE 800/321-7000 INFO ONLY	
Other ACC Names	GBL		
Synonyms	None		
Other Industry Names	Dihydro-2(3H)-Furanone; Gamma Hydroxy Butyric Acid Lactone; 4-Butyrolactone		
Chemical Family	Lactones	DOT Hazardous Materials Proper Shipping Name: Not regulated	
Generic Name	Gamma Butyrolactone	DOT Hazard Class: Not regulated	DOT Reportable Quantity: N/AP
CAS No. (See Section 9 - Components)		ACC Material ID BE268	UN/NA ID No. N/AP

2. Summary of Hazards

Signal Word	WARNING
Physical Hazards	Slightly combustible liquid
Acute Health Effects (Short-Term)	Moderate inhalation hazard Severe eye irritant Slight ingestion hazard No skin irritation hazard identified from data available Slight skin absorption hazard (See Section 4 - Health Hazards)
Chronic Health Effects (Long-Term)	Gamma-butyrolactone was not carcinogenic in rats or mice by oral, subcutaneous injection, or dermal administration, nor was this material teratogenic in limited tests in rats (See Section 4 - Health Hazards - Summary of Chronic Hazards)

3. Fire and Explosion

Flash Point AP 209 °F (SETA)	Autoignition Temperature AP 820 °F	Flammable Limits (at Normal Atmospheric Temp and Pressure) Lower: AP 3.6 (% vol in air) Upper: AP 16 (% vol in air)

Fire and Explosion Hazards	Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may be heavier than air. May travel long distances along ground before igniting/flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point.
Extinguishing Media	CO_2 Dry chemical Foam Water spray Water fog
Extinguishing Media Use Comment	No additional information available
Special Firefighting Procedures	Do not enter fire area without proper protection. (See Section 12 - Hazardous Decomposition Products). Fight fire from a safe distance/protected location. Heat may build pressure/rupture closed containers, spreading fire, increasing risk of burns/injuries. Do not use solid water stream/may spread fire. Use water spray/fog for cooling. Avoid frothing/steam explosion. Burning liquid will float on water. Notify authorities if liquid enters sewer/public waters.

4. Health Hazards

Summary of Acute Hazards	High health hazard - see below for route-specific details.

ROUTE OF EXPOSURE	SIGNS AND SYMPTOMS	PRIMARY ROUTE(S)
Inhalation	No appropriate human or animal health effects data are known to exist.	Yes
Eye Contact	May cause severe eye irritation.	Yes
Skin Absorption	Extensive/prolonged or repeated exposure to this material can result in significant absorption.	Yes
Skin Irritation	No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure.	No
Ingestion	This material may be a slight health hazard if ingested in large quantities.	No

Summary of Chronic Hazards	Gamma-butyrolactone was not carcinogenic in rats or mice by oral, subcutaneous injection, or dermal administration, nor was the material teratogenic in limited tests in rats. (See Section 11 - Additional Toxicological Information).
Special Health Effects	This material or its emissions may aggravate pre-existing eye disease.

5. Protective Equipment and Other Control Measures

Respiratory	No occupational exposure standards have been developed for this material. Where exposure through inhalation may occur from use, NIOSH/MSHA approved respiratory protection equipment is recommended.
Eye	Eye protection, including both chemical splash goggles and face shield, must be worn when possibility exists for eye contact due to splashing/spraying liquid, airborne particles, or vapor. Contact lenses must not be worn.
Skin	Depending on the conditions of use, protective gloves, apron, boots, head and face protection should be worn. The equipment must be cleaned thoroughly after each use.
Engineering Controls	At elevated temperatures, special ventilation may be required even if the flash point has not been exceeded. Flammable mists or aerosols can be generated below the flash point of high boiling liquids.
Other Hygienic Practices	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Other Work Practices	Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse. Shower after work using plenty of soap and water.

6. Occupational Exposure Limits

Substance	Source	Date	Type	Value/Units	Time	Skin
No established standards						

Industrial Hygiene Comments	No additional Occupational Exposure Limit information available

7. Emergency and First Aid

Inhalation	If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.
Eye Contact	In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention.
Skin Contact	Remove contaminated clothing as needed. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first.
Ingestion	If large quantity swallowed, give lukewarm water (pint) if victim completely conscious/alert. Do not induce vomiting/aspiration if risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.
Emergency Medical Treatment Procedures	Induce vomiting with syrup of ipecac if patient is awake/alert. Treat symptomatically. Gastric lavage indicated for complete emptying.
Detoxification Procedures	Following gastric emptying either by induced vomiting or gastric lavage, administer an aqueous slurry of activated charcoal followed by a cathartic.

GAMMA BUTYROLACTONE

MSDS No P000677-1-OSHA-AE
Ver. Date NOV 3 93

8. Spill and Disposal

Precautions if Material is Spilled or Released
May contaminate water supplies/pollute public waters. Evacuate/limit access. Equip responders with proper protection (See Section 5 - Protective Equipment). Prevent flow to sewers/public waters. Stop release. Notify fire and environmental authorities. Restrict water use for cleanup. Slippery walking. Spread granular cover. Impound/recover large land spill. Soak up small spill with inert solids. Use suitable disposal containers. On water, material soluble/may float or sink. May biodegrade. Contain/minimize dispersion/collect. Disperse residue to reduce aquatic harm. Report per regulatory requirements.

Waste Disposal Methods
Contaminated product/soil/water may be RCRA/OSHA hazardous waste due to potential for eye irritation/water pollution. (See 40 CFR 261 and 29 CFR 1910). Landfill solids at permitted sites. Use registered transporters. Burn concentrated liquids in systems compatible with water soluble wastes. Avoid flameouts. Assure emissions comply with applicable regulations. Dilute/aqueous waste may biodegrade. Avoid overloading/poisoning plant biomass. Assure effluent complies with applicable regulations.

9. Components

(This may not be a complete list of components.) (Compositions are typical values, not specifications.)

Component Name	CAS No.	Composition Amount (Wt.)	Carcinogen ###
Gamma-Butyrolactone	96-48-0	GT 98 %	N/P

1 = National Toxicology Program 2 = International Agency for Research on Cancer 3 = Occupational Health and Safety Administration 4 = Other

10. Component Health Hazards

Component	Component Health Hazards (See Section 11 - Addt'l Tox Info.)
Gamma-Butyrolactone	

11. Additional Toxicological Information

Component Name/Comments

Gamma-Butyrolactone
Overexposure to Gamma-Butyrolactone is expected to cause symptoms of Central Nervous System (CNS) depression. In experimental animals (dosed orally or by injection) changes in levels of neurotransmitters have been reported. Behavioral changes in these experimental animals consistent with changes in neurotransmitter levels were noted in these studies.

Material
No additional toxicology information is available for this material.

12. Physical and Chemical Data

Boiling Point AP 400 °F	Viscosity AP 2 CPS (at 68° F) (Brookfield)	Dry Point N/AP
Freezing Point AP -46 °F	Vapor Pressure AP 1.5 MM HG (at 68° F)	Volatile Characteristics Slight
Specific Gravity AP 1.12 (H2O = 1.0 at 39.2° F)	Vapor Specific Gravity GT 3 (Air = 1.0 at 60-90° F)	Solubility in Water Miscible
pH AP 7 to 8	Hazardous Polymerization Not expected to occur	Stability Stable

Other Chemical Reactivity	No additional information available
Other Physical and Chemical Properties	No additional information available
Appearance and Odor	Clear, colorless; Liquid; Little or no odor
Conditions to Avoid	Heat, sparks, open flame, other ignition sources, and oxidizing conditions

SEQ:84

12. Physical and Chemical Data (Cont'd)

Materials to Avoid	Strong acids, Strong bases, Strong oxidizing agents
Hazardous Decomposition Products	Incomplete combustion may produce carbon monoxide and other toxic gases

13. Hazards Rating Information

National Fire Protection Association
No hazards rating information is available for this system

National Paint and Coatings Association

Hazardous Materials Information System (HMIS)
No hazards rating information is available for this system

14. Additional Precautions

Handling and Storage Procedures
Store in tightly closed/properly vented containers. Store away from heat, sparks, open flame and strong oxidizing agents.

Decontamination Procedures
Equipment containing this material should be isolated and thoroughly drained, washed and purged prior to maintenance/repair operations. Wear recommended personal protective equipment.

GAMMA BUTYROLACTONE

MSDS No P000577-1-OSHA-AE
Ver. Date NOV 3 93

15. Regulatory Information

FEDERAL:

Toxic Substance Control Act (TSCA)
The following is the TSCA Chemical Substance Inventory Status of the components of this material with CAS numbers listed in Section 9 - Components:

CHEMICAL	CAS NO.	STATUS
Gamma-Butyrolactone	96-48-0	1. Listed - Non Confidential

Superfund Amendments and Reauthorization Act of 1988 (SARA), Title III

- Section 302/304

Requires emergency planning based on "Threshold Planning Quantities" (TPQs), and release reporting based on Reportable Quantities (RQs) of "Extremely Hazardous Substances" (EHS) listed in Appendix A of 40 CFR 355. There are no components of this material with known CAS numbers which are on the EHS list.

- Section 311 & 312

Based upon available information, this material and/or components are not classified as any of the specific health and/or physical hazards defined by Section 311 & 312.

- Section 313

The material does not contain any chemical components with known CAS numbers that exceed the De Minimis reporting levels established by SARA Title III, Section 313 and 40 CFR 372.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.

OSHA Regulations
"Chemical-specific" OSHA regulations presented under 29 CFR 1910 do not apply to this material or its components.

Other EPA Regulations
No additional information is available.

Department of Transportation (DOT)
Other than the normal shipping instructions and information given in this MSDS, there are no other specific DOT regulations governing the shipment of this material.

STATE REGULATIONS:

California Safe Drinking Water and Toxic Enforcement Act of 1988 - Proposition 65

This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins under California Proposition 65 at levels which would be subject to the proposition.

California South Coast Air Quality Management District (SCAQMD) Rule 443.1 (VOC's)
A Volatile Organic Compound (VOC) is any volatile compound of carbon excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1-trichloroethane, methylene chloride, (FC-23), (CFC-113), (CFC-12), (CFC-11), (CFC-22), (CFC-114), and (CFC-115). By this definition, this is a VOC material.

Massachusetts Right-to-Know Substance List (MSL) [105 CMR670.000]

Extraordinarily Hazardous Substances (MSL-EHS) must be identified when present in materials at levels greater than state specified criterion. The criterion is >= 0.0001%. Hazardous Substances (MSL-HS) on the MSL must be identified when present in materials at greater than the state specified criterion. The criterion is >= 1%. Components with CAS numbers present in this material, at levels specified in Section 9 - Components, do not require reporting under the statute.

New Jersey Registration
The New Jersey, Registry 3, Registration law does not apply to this material, as none of its components are trade secrets.

15. Regulatory Information (Cont'd)

Pennsylvania Right-to-Know Hazardous Substances Lists
Special Hazardous Substances (PA-SHS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is >= 0.01%. Hazardous Substances (PA-HS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is >= 1%. Environmental Hazards (PA-EH) must be identified when present in materials at levels greater than the state specified criterion. The criterion is >= 0.01%. Components with CAS numbers present in this material, at levels specified in Section 9 - Components, do not require reporting under the statute.

Regulatory Advisory
If you reformulate or further process this material, you should consider re-evaluation of the regulatory status of the components listed in Section 9, based on the final composition of your product.

GAMMA BUTYROLACTONE

MSDS No P000577-1-OSHA-AE
Ver. Date NOV 3 93

16. Label Information

Manufacturer:
ARCO Chemical Company
3801 West Chester Pike
Newtown Square
PA 19073 USA

Telephone Numbers :
EMERGENCY
800/424-9300 CHEMTREC
610/359-8300 ARCO CHEM
CUSTOMER SERVICE
800/321-7000 INFO ONLY

Other ACC Names: GBL

Signal Word: WARNING

Use Statement: For industrial use only
Keep out of reach of children

Physical Hazards
Combustible

Health Hazards
Ingestion hazard
Inhalation hazard
Skin contact hazard
Severe eye irritant
May cause long-term adverse health effects

Precautionary Measures
Do not handle near heat, sparks, or open flame
Do not store near combustible materials
Avoid contact with eyes
Avoid prolonged or repeated breathing of gases, vapors, or mists
Avoid prolonged or repeated contact with skin
Use only with adequate ventilation/personal protection
Prevent contact with food, chewing, or smoking materials
Wash thoroughly after handling
Do not take internally
Keep container closed when not in use

DOT Information: UN/NA ID No. N/AP DOT Hazard Class: Not regulated DOT Reportable Quantity: N/AP

DOT Hazardous Materials Proper Shipping Name: Not regulated

Component Name	CAS No.	Composition Amount (Wt.)		RQ
Gamma-Butyrolactone	96-48-0	GT 98	%	N/AP

Instructions: In case of fire, use: CO2; Dry chemical; Foam; Water spray; Water fog

First Aid: Inhalation — If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

Eye Contact — In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention.

Skin Contact — Remove contaminated clothing as needed. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first.

Ingestion — If large quantity swallowed, give lukewarm water (pint) if victim completely conscious/alert. Do not induce vomiting/aspiration if risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.

In case of spill: May contaminate water supplies/pollute public waters. Slippery walking/spread granular cover. On water, may biodegrade. Contain/minimize dispersion/collect. Report per regulatory requirements.

Protective Equipment

Respiratory — Where excessive vapor, mist, or dust exposure may result from use, use NIOSH/MSHA approved respiratory protection equipment.

Eye — Both chemical splash goggles and face shield must be worn.

Skin — Clothing such as gloves, apron, sleeves, boots, and full head/face protection appropriate to conditions of use should be worn.

Label No.: LP000577 Version No.: 1 Date: SEP 1 93

17. General Comments

General Comments
No additional information available.

Other Comments
Some of the information presented and conclusions drawn herein are from sources other than direct test data on the material itself.

Note Qualifications:	EQ=Equal	AP=Approximately	N/P=No applicable information found
	LT=Less Than	UK=Unknown	N/AP=Not applicable
	GT=Greater Than	TR=Trace	N/DA=No Data Available

Disclaimer of Liability

The information in the MSDS was obtained from sources which we believe are reliable.
HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge.
FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

This MSDS was prepared and is to be used only for this product.
If the product is used as a component in another product, this MSDS information may not be applicable.

Print Date

January 13, 1994

Table 1. Summary of "Best Estimate", "Upper Limit" and "Uncertainty Adjusted" MIR Values as of 8/6/98.

Compound or Mixture	"Best Est" MIR			Upper Limit MIR				U.Adj.	Rate Constants (cm^3 $molec^{-1}$ s^{-1})									
	Unc	MR	IR (g/g)	KR	MR Tp.	MR Max	IR (g/g)	MIR (g/g)	Adj. Eff. kOH	kOH Value	kOH Ref.	kOH Note	kO3 Value	kO3 Ref.	kO3 Note	kNO3 Value	kNO3 Ref.	kNO3 Note
Alkyl Phenols	5	6	2.42	1.00	NP	32	14.20	2.42	9.8e-11	4.2e-11	2					1.4e-11	2	
Alkyl Phenols	5	6	2.42		LM		14.20	2.42										
Alkyl Phenols	5	6	2.42		LM		14.20	2.42										
Alkyl Phenols	5	6	2.42		NP	32		2.42										
Nitrobenzene	11	7	0.07	0.03	U			0.15	1.5e-13	1.5e-13	2,39							
Toluene Diisocyanate	-				U													
Ethyl Amine	11	11	10.56	1.00	NP	12	12.73	12.73	2.8e-11	2.8e-11	69							
Dimethyl Amine	11	13	12.16	1.00	NP	12	12.24	12.24	6.6e-11	6.6e-11	69							
Trimethyl Amine	11	12	9.58	1.00	NP	16	14.62	14.62	6.1e-11	6.1e-11	69							
Methyl Nitrite	3				P													
Ethanolamine	-				P													
Diethanol Amine	-				P													
Triethanolamine	-				P													
Acrylonitrile	-				U													
N-Methyl-2-Pyrrolidone	5	6	2.79	0.99	U			2.79	2.2e-11	2.2e-11	20					1.3e-13	20	
Methyl Chloride (explicit)	-				NP	6												
Methyl Chloride	-				NP	6												
Dichloromethane	-			0.03	NP	6	0.10	0.10	1.4e-13	1.4e-13	2							
Methyl Bromide	-			0.01	NP	6	0.02	0.02	3.9e-14	3.9e-14	2							
Chloroform	-				NP	6												
Carbon Tetrachloride					LM													
Methylene Bromide	-				NP	6												
Vinyl Chloride	-				NP	12												
Ethyl Chloride	-				NP	12												
Trans-1,2-Dichloroethene	-				NP	12												
1,1-Dichloroethene	-				NP	12												
1,1-Dichloroethane	-				NP	12												
Ethylene Dichloride	-				NP	12												
Ethyl Bromide	-				NP	12												
1,1,2-Trichloroethane	-				NP	12												
1,1,1-Trichloroethane	-			0.02	NP	12	0.09	0.09	1.0e-13	1.0e-13	2							
Perchloroethylene	-			0.03	NP	12	0.12	0.12	1.7e-13	1.7e-13	2							
Ethylene Dibromide	-				NP	12												
1,2-Dichloropropane	-				NP	16												
n-Propyl Bromide	6				NP	16												
1-Chlorobutane	-				NP	24												
n-Butyl Bromide	6				NP	24												